Sketch the following quadratics, showing the intersection with the axes and the turning point.

1 $y = x^2 - 4x + 3$

Cut x-axis when y = 0

$y = x^2 - 4x + 3$

$x^2 - 4x + 3 = 0$

$(x - 3)(x - 1) = 0$

$x = 3 \qquad x = 1$

Roots:

$(3,0) \qquad (1,0)$

Cut y-axis when x = 0

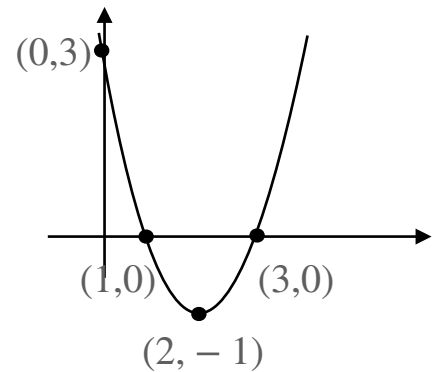$y = x^2 - 4x + 3$

$y = (0)^2 - 4(0) + 3$

$y = 3$

y-intercept:

$(0,3)$

Decide Shape of Parabola

Positive x²

*Axis of Symmetry
halfway between roots*

$x = \frac{1 + 3}{2}$

$x = 2$

Turning point

$y = (2)^2 - 4(2) + 3$

$y = 4 - 8 + 3$

$y = -1$

$(2, -1)$

Sketch:

$(0,3)$

$(1,0) \qquad (3,0)$

$(2, -1)$

---

2 $y = x^2 - 4x - 5$

Cut x-axis when y = 0

Cut y-axis when x = 0

Decide Shape of Parabola

Sketch:

*Axis of Symmetry
halfway between roots*

Turning point

Sketch the following quadratics, showing the intersection with the axes and the turning point.

(3) $y = x^2 - 6x + 8$

Cut x-axis when y = 0   *Cut y-axis when x = 0*   *Decide Shape of Parabola*

Sketch:

*Axis of Symmetry   *Turning point*
halfway between roots*

(4) $y = (x + 3)(x - 1)$

Cut x-axis when y = 0   *Cut y-axis when x = 0*   *Decide Shape of Parabola*

Sketch:

*Axis of Symmetry   *Turning point*
halfway between roots*

Sketch the following quadratics, showing the intersection with the axes and the turning point.

(5) $y = 8x - x^2$

Cut x-axis when y = 0

Cut y-axis when x = 0

Decide Shape of Parabola

Sketch:

*Axis of Symmetry
halfway between roots*

Turning point

....

(6) Sketch the following quadratics, showing the intersection with the axes and the turning point.

(A) $y = x^2 + 4x$

(B) $y = x^2 - 9$

(C) $y = 16x - 4x^2$

(D) $y = x^2 + 2x - 15$

(E) $y = x^2 - 4x - 12$

(F) $y = -x^2 + 6x + 7$